Docket No.: M4065.0703/P703-A
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Design Application of:
Kristy A. Campbell, et al.

Examiner: Not Yet Assigned

Application No.: N/A 10/825,319

Art Unit: N/A

Filed: April 16, 2004

For: METHOD OF FORMING CHALCOGENIDE COMPRISING DEVICES AND METHOD OF FORMING A PROGRAMMABLE MEMORY CELL OF MEMORY CIRCUITRY

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 CFR 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed within three months of the U.S. filing date (37 CFR 1.97(b)(1)).

Copies of the references on the PTO/SB/08 are not provided.

Those patents and publications which are marked with an asterisk (*) next to the Cite No. in the attached form PTO/SB/08 are not supplied because they were previously

cited by or submitted to the Office in a prior application number 09/943,187, filed August 29, 2001, and relied upon in this application for an earlier filing date under 35 U.S.C. 120.

A brief explanation of the relevance pertaining to some of the non-patent documents listed on form PTO/SB/08 is provided and attached hereto as Appendix A. The brief explanation provided for each document is not tantamount to an admission that a document is "material" or that it qualifies as prior art. The Examiner is respectfully requested to utilize Appendix A only as a tool by which to better categorize the documents for substantive use in examining the claims of the application.

Documents discussed in Appendix A marked with an asterisk (**) are indicated to be potentially more relevant than others. Such marking is provided only to assist the Examiner; however, the Examiner is requested to thoroughly review all documents cited herein.

In accordance with 37 CFR 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR 1.56(a) exists. In accordance with 37 CFR 1.97(h), the filing of this Information Disclosure statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 CFR 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1073, under Order No. M4065.0703/P703-A. A duplicate copy of this paper is enclosed.

Dated: May 5, 2004

Respectfully submitted,

By_____

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APPENDIX A

Abdel-All, et al., Vacuum 59 (2000) 845-853: published in December, this document generally relates to, inter alia, the electrical properties of $Ge_5As_{38}Te_{57}$ as a function of temperature.

**Adler and Moss, J. Vac. Sci. Technol. 9 (1972) 1182-1189: this document generally relates to, inter alia, two types of electrical/material switching – threshold and memory, in amorphous materials; the effects of temperature, pressure, and frequency on switching; and the physics of threshold voltage and memory.

Adler et al., Ref. Mod. Phys. 50 (1978) 209-220: this document generally relates to, inter alia, threshold switching in amorphous alloys, state ("on" and "off") characteristics, and glass properties.

Afifi, et al., Appl. Phys. A 55 (1992) 167-169: this document generally relates to, inter alia, SeGe-Sb glasses.

**Afifi, et al., J. Phys. 17 (1986) 335-342: this document generally relates to, inter alia, electrical and thermal conductivity of Ge_xSe_{1-x} compositions as a function of temperature. $Ge_{25}Se_{75}$ stoichiometry is disclosed.

Alekperova and Gadzhieva, 23 (1987) 137-139: this document generally relates to, inter alia, a characteristic diode state in Ag_2Se compositions upon heating (to 376-400°K).

**Aleksiejunas and Cesnys, Phys. Stat. Sol. (a) 19 (1973) K169-K171: this document generally relates to, inter alia, the subjects of selenium investigation and how Se-Ag_2Se contributes silver ions to a selenium composition.

Angell, Annu. Rev. Phys. Chem. 43 (1992) 693-717: this document generally relates to, inter alia, the presence of ion conductors in solids.

Aniya, Solid State Ionics 136-137 (November 2,2000) 1085-1089: this document generally relates to, inter alia, ion conductor glasses.

Asahara and Izumitani, J. Non-Cryst. Solids 11 (1972) 97-104: this document generally relates to, inter alia, Cu-As-Se glass.

Asokan, et al., Phys. Rev. Lett. 62 (1989) 808-810: this document generally relates to, inter alia, Ge_xSe_{100-x} glasses and their transition from semiconductor-like material to metal-like material.

Baranovskii and Cordes, J. Chem. Phys. 111 (1999) 7546-7557: this document generally relates to, inter alia, ionic glasses and conduction (percolation theory).

Belin et al., Sol. St. Ionics 136-137 (November 2,2000) 1025-1029: this document generally relates to, inter alia, conductivity spectra of the glass $0.5Ag_2S.0.5GeS_2$ and the temperature dependency of the conductivity.

Belin, et al., Solid State Ionics 143 (July 2,2001) 445-455: this document generally relates to, inter alia, the electrical properties of Ag_7GeSe_5I – an argyrodite compound.

Benmore and Salmon, Phys. Rev. Lett. 73 (1994) 264-267: this document generally relates to, inter alia, the characteristics of chalcogenide alloys.

Bernede, Thin Solid Films 70 (1980) L1-L4: this document is in the French language and the Applicant has no translation. It is presently understood to generally relate to, inter alia, metal-Ag_2Se-metal sandwich devices.

Bernede, Thin Solid Films 81 (1981) 155-160: this document generally relates to, inter alia, memories of selenium alloys with metal (e.g., Ag) electrodes, where the "on" memory states require constant voltage.

Bernede, Phys. Stat. Sol. (a) 57 (1980) K101-K104: this document generally relates to, inter alia, metal-Ag_2Se-P systems.

Bernede and Abachi, Thin Solid Films 131 (1985) L61-L64: this document generally relates to, inter alia, metal-insulator-metal thin films with electroforming effects; the films have silver, gold and copper electrodes.

**Bernede, et al., Thin Solid Films 97 (1982) 165-171: this document generally relates to, inter alia, Ag2Se/Se/Metal thin film sandwiches, which were studied by shape of electrodes (e.g., symmetrical or asymmetrical).

Bernede, et al., Phys. Stat. Sol. (a) 74 (1982) 217-224: this document generally relates to, inter alia, switching in Al-$Al_2O_3Ag_{2-x}Se_{1+x}$ devices.

Bondarev and Pikhitsa, Solid State Ionics 70/71 (1994) 72-76: this document generally relates to, inter alia, $Ag^{(-)}/RbAg_4I_5$ boundary – depletion layer, and dendritic electrodeposition.

**Boolchand, Asian Journal of Physics (2000) 9, 709-72: this document generally relates to, inter alia, Ge_xSe_{1-x} glasses, which have selenium-rich and germanium-rich clusters, and the intrinsically-broken bond characteristics thereof.

**Boolchand and Bresser, Nature 410 (2001) 1070-1073: published April 26, this document generally relates to, inter alia, Ag_2Se as an electrolyte additive to glass, e.g., $GeSe_4$. $Ge_{30}Se_{70}$ glass was found not to work well because of Ag_2Se crystallization.

**Boolchand, et al., J. Optoelectronics and Advanced Materials, 3 (September 2001), 703: this document generally relates to, inter alia, a review of Raman tool scattering of chalcogenide glasses. The floppyness and rigidness is observed. Ge_xSe_{1-x} is disclosed, as is a stoichiometry of $Ge_{25}Se_{75}$.

Boolchand and Grothaus, Eds. Chadi and Harrision, Proc. Int. Conf. Phys, Semicond., 17th (1985) 833-36: this document generally relates to, inter alia, GeSe and GeS glasses and the importance of a broken chemical order therein.

**Boolchand, et al., Properties and Applications of Amorphous Materials, M.F. Thorpe and Tichy, L. (eds.) Kluwer Academic Publishers, the Netherlands, 2001, pp. 97-132: this document generally relates to, inter alia, the prediction of glass rigidity in Ge_xSe_{1-x} glass, e.g., $Ge_{23}Se_{77}$.

**Boolchand, et al., Diffusion and Defect Data, Vol. 53-54 (1987) 415-420: this document generally relates to, inter alia, thermal annealing of Ge_xSe_{1-x} films.

**Boolchand, et al., Phys. Rev. B 25 (1982) 2975-2978: this document generally relates to, inter alia, the examination of GeSe glass having Sn impurities by Mossbauer spectroscopy. Investigations into glass network topology, which has an intrinsically broken bond backbone, suggesting Ge and Se rich clusters.

Boolchand, et al., Sol. State Comm. 45 (1983) 183-185: this document generally relates to, inter alia, Ge_xSe_{1-x} and Ge_xS_{1-x} glasses.

**Boolchand and Bresser, Dep. Of ECECS, Univ. Cincinnati 45221-0030: this document generally relates to, inter alia, Ge_xSe_{1-x} and the relation of glass transition temperature to Ge concentration in backbone. Although the publication date of this reference is not known to the Applicant, it was revised October 28, 1999 and is believed to be publicly available at the University of Cincinnati, Department of Electrical and Computer Engineering and Computer Science.

Bresser, et al., Phys. Rev. Lett. 56 (1986) 2493-2496: this document generally relates to, inter alia, an investigation of c-$GeSe_2$ structure.

Bresser, et al., J. de Physique 42 (1981) C4-193-C4-196: this document generally relates to, inter alia, the characteristics of $GeSe_2$ and GeS_2 glasses.

Bresser, et al., Hyperfine Interactions 27 (1986) 389-392: this document generally relates to, inter alia, germanium selenide glasses doped with tellurium.

Cahen, et al., Science 258 (1992) 271-274: this document generally relates to, inter alia, chalcopyrite $CuInSe_2$ glasses.

Chatterjee, et al., J. Phys. D: Appl. Phys. 27 (1994) 2624-2627: this document generally relates to, inter alia, $As_xTe_{100-x-y}Se_y$ glasses and the current, voltage, and electrical switching behavior. Discloses applicability in read mostly memories.

**Chen and Tai, Appl. Phys. Lett. 37 (1980) 1075-1077: this document generally relates to, inter alia, silver photodoping of Ge_xSe_{1-x} and whisker formation (crystalline Ag_2Se).

Chen and Cheng, J. Am. Ceram. Soc. 82 (1999) 2934-2936: this document generally relates to, inter alia, germanium containing chalcogenides doped with Si_3N_4.

Chen, et al., J. Non-Cryst. Solids 220 (1997) 249-253: this document generally relates to, inter alia, $As_{10}Ge_{30}Se_{60}$ glasses (and the like) doped with Si_3N_4.

Cohen, et al., J. Non-Cryst. Solids 8-10 (1972) 885-891: this document generally relates to, inter alia, Ge-Te-X glasses as memory devices.

Croitoru, et al., J. Non-Cryst. Solids 8-10 (1972) 781-786: this document generally relates to, inter alia, the physics of conductivity in Ge-containing films.

Dalven and Gill, J. Appl. Phys. 38 (1967) 753-756: this document generally relates to, inter alia, beta-Ag_2Te.

Davis, Search 1 (1970) 152-155: this document generally relates to, inter alia, the subject of amorphous semiconductors as compared to glass.

**Dearnaley, et al., Rep. Prog. Phys. 33 (1970) 1129-1191: this document generally relates to, inter alia, background information about glass and memory.

**Dejus, et al., J. Non-Cryst. Solids 143 (1992) 162-180: this document generally relates to, inter alia, Ag-Ge-Se glass with Ag primarily bonded to Se. The reference discloses glass preparation.

den Boer, Appl. Phys. Lett. 40 (1982) 812-813: this document generally relates to, inter alia, a-Si:H sandwich structures and threshold switching from a low to high conductance.

Drusedau, et al., J. Non-Cryst. Solids 198-200 (1996) 829-832: this document generally relates to, inter alia, work with a-Si:H multilayers optoelectrical properties.

El Bouchairi, et al., Thin Solid Films 110 (1983) 107-113: this document generally relates to, inter alia, $Ag_{2-x}Se_{1+x}$ thin film electrical characteristics and metal-like conduction.

El Gharras, et al., J. Non-Cryst. Solids 155 (1993) 171-179: this document generally relates to, inter alia, photoconductivity of amorphous Se and Ge-Se alloy evaporated films, and reduction of photocurrent by increase of Ge content.

**El Ghrandi, et al., Thin Solid Films 218 (1992) 259-273: this document generally relates to, inter alia, GeSe films deposited by PECVD, Ag evaporation deposition onto glass and photodissolution into same, and optical properties are investigated. GeSe stoichiometries of 30/70 and 25/75, respectively, are disclosed.

**El Ghrandi, et al., Phys. Stat. Sol. (a) 123 (1991) 451-460: this document generally relates to, inter alia, dissolution of Ag into $GeSe_{5.5}$ glass by flash evaporation.

El-kady, Indian J. Phys. 70 A (1996) 507-516: this document generally relates to, inter alia, $Ge_{21}Se_{17}Te_{62}$ glass and memory, switching, and current controlled negative resistance.

Elliott, J. Non-Cryst. Solids 130 (1991) 85-97: this document generally relates to, inter alia, mechanisms of photodissolution of metals (e.g., Ag) in chalcogenides based on ionic and electronic charge carriers.

**Elliott, J. Non-Cryst. Sol. 130 (1991) 1031-1034: this document generally relates to, inter alia, the photodissolution of metals (e.g, Ag) in chalcogenide glasses and the physics thereof.

Elsamanoudy, et al., Vacuum 46 (1995) 701-707: this document generally relates to, inter alia, studies of quaternary chalcogenide films with Te-As-Ge-Si sandwich structures between electrodes.

**El-Zahed and El-Korashy, Thin Solid Films 376 (November 1,2000) 236-240: this document generally relates to, inter alia, $Ge_{20}Bi_xSe_{80-x}$ film analysis regarding conduction and changes from p to n type.

Fadel, Vacuum 44 (1993) 851-855: this document generally relates to, inter alia, a study of the switching and memory characteristics of $Se_{75}Ge_{25-x}As_x$ films.

**Fadel and El-Shair, Vacuum 43 (1992) 253-257: this document generally relates to, inter alia, $Se_{75}Ge_7Sb_{18}$ glass electrical conduction and thermal character.

Feng, et al., Phys. Rev. Lett. 78 (1997) 4422-4425: this document generally relates to, inter alia, germanium selenide and germanium sulfide materials.

**Feng, et al., J. Non-Cryst. Solids 222 (1997) 137-143: this document generally relates to, inter alia, the structural character of Ge_xS_{1-x} glass, e.g., hardness and elasticity.

**Fischer-Colbrie, et al., Phys. Rev. B 38 (1988) 12388-12403: this document generally relates to, inter alia, photodiffused Ag-$GeSe_2$ and the interaction between doped Ag with Se atoms and Ge with Ge atoms.

Fleury, et al., Phys. Stat. Sol. (a) 64 (1981) 311-316: this document generally relates to, inter alia, amorphous selenium films and their conductance.

Fritzsche, J. Non-Cryst. Sol. 6 (1971) 49-71: this document generally relates to, inter alia, background information on chalcogenides as semiconductors.

Fritzsche, Annual Review of Mat. Sci. 2 (1972) 697-744: this document generally relates to, inter alia, background information on amorphous semiconductors.

Gates, et al., J. Am. Chem. Soc. (2001): this document generally relates to, inter alia, creating Ag_2Se nanowires by chemical reaction.

Gosain, et al., Jap. J. Appl. Phys. 28 (1989) 1013-1018: this document generally relates to, inter alia, germanium telluride glasses sandwiched in electrodes and the physics thereof.

**Guin et al., J. Non-Cryst. Sol. 298 (March 28,2002) 260-269: this document generally relates to, inter alia, germanium selenide (GeSe) glass with low hardness, the mechanical properties of which are investigated. Stoichiometries of the glass are disclosed as being, inter alia, 10/90, 20/80, and 30/70, respectively.

**Guin et al., J. Am. Ceram. Soc. 85 (June 2002) 1545-1552: this document generally relates to, inter alia, germanium selenide glasses and a study of the hardness properties thereof. Glass stoichometries of 40/60 and 20/80, respectively, are disclosed.

Gupta, J. Non-Cryst. Sol. 3 (1970) 148-154: this document generally relates to, inter alia, switching in chalcogenides.

Haberland and Stiegler, J. Non-Cryst. Solids 8-10 (1972) 408-414: this document generally relates to, inter alia, glasses containing Te, As, Ge, and Si, and pulse sequence and time factors in switching.

Haifz, et al., J. Apply. Phys. 54 (1983) 1950-1954: this document generally relates to, inter alia, As-Se-Cu glasses.

Hajto, et al., Int. J. Electronics 73 (1992) 911-913: this document generally relates to, inter alia, metal/a-Si:H/metal devices.

Hajto, et al., J. Non-Cryst. Solids 266-269 (May 1,2000) 1058-1061: this document generally relates to, inter alia, a-Si:H ion conductors, polarity-dependant digital and analogue memory, and dependency on contact metals.

Hajto, et al., J. Non-Cryst. Solids 198-200 (1996) 825-828: this document generally relates to, inter alia, electroformed V/a-Si:H/Cr devices.

Hajto, et al., Phil. Mag. B 63 (1991) 349-369: this document generally relates to, inter alia, p+ type amorphous Si memory structures with polarity dependent analogue switching.

Hayashi, et al., Japan. J. Appl. Phys. 13 (1974) 1163-1164: this document generally relates to, inter alia, Au-CdS(CdSe)-Au systems and metal-Se-Sn-SnO_2 systems.

**Hegab, et al., Vacuum 45 (1994) 459-462: this document generally relates to, inter alia, $Ge_{20}M_{75}Sb_{18}$ glass electrical conduction and thermal character.

Helbert et al., SPIE Vol. 333 Submicron Lithography (1982): this publication generally relates to, inter alia, hybrid ultragraphic process using both electron beam and conventional optical exposure within the same device level with a photoresist.

Hong and Speyer, J. Non-Cryst. Solids 116 (1990) 191-200: this document generally relates to, inter alia, Cd-Ge-As glass with Ag contacts.

Hosokawa, J. Optoelectronics and Advanced Materials 3 (2001) 199-214: this document generally relates to, inter alia, x-ray scattering experiments on glassy Ge_xSe_{1-x}.

Hu, et al., J. Non-Cryst. Solids 227-230 (1998) 1187-1191: this document generally relates to, inter alia, a-Si:H with Cr and V electrodes.

Hu, et al., Phil. Mag. B. 74 (1996) 37-50: this document generally relates to, inter alia, a-Si:H glasses doped with Cr and analogue memory.

Hu, et al., Phil. Mag. B 80 (January 1, 2000) 29-43: this document generally relates to, inter alia, a-Si:H films doped with Cr-p+.

Iizima, et al., Solid State Comm. 8 (1970) 153-155: this document generally relates to, inter alia, switching and memory effects in As-Te-I[1,2] and As-Te-Ge-Si[3] glass systems. Thermal breakdown is proposed switching effect.

Ishikawa and Kikuchi, J. Non-Cryst. Solids 35 & 36 (1980) 1061-1066: this document generally relates to, inter alia, Ge_2S_2 films with Ag photodissolved therein.

**Iyetomi, et al., J. Non-Cryst. Solids 262 (February 2000) 135-142: this document generally relates to, inter alia, Ag/Ge/Se glasses as a composite of $GeSe_2$ and Ag_2Se (a fast ion conductor) and polarizability of Se ions.

Jones and Collins, Thin Solid Films 40 (1977) L15-L18: this document generally relates to, inter alia, switching in Se films and switching back with reverse pulse.

Joullie and Marucchi, Phys. Stat. Sol. (a) 13 (1972) K105-K109: this document generally relates to, inter alia, As_2Se_7 glass.

Joullie and Marucchi, Mat. Res. Bull. 8 (1973) 433-442: this document generally relates to, inter alia, As_2Se_5 film conduction and switching.

Kaplan and Adler, J. Non-Cryst. Solids 8-10 (1972) 538-543: this document generally relates to, inter alia, thermal effects on semiconductor switching.

**Kawaguchi and Masui, Japn. J. Appl. Phys. 26 (1987) 15-21: this document generally relates to, inter alia, silver photodoping of chalcogenide films, e.g., $Ge_{30}Se_{70}$ films.

**Kawasaki, et al., Solid State Ionics 123 (1999) 259-269: this document generally relates to, inter alia, the electrical properties of $Ag_x(GeSe_3)_{1-x}$, conductivity EMF measurements, glass composition, X-ray diffraction, T_g and T_c, Ag ion transport, and glass structure.

**Kolobov, J. Non-Cryst. Solids 198-200 (1996) 728-731: this document generally relates to, inter alia, p-type conductive chalcogenides, materials, and physics thereof.

**Kolobov, J. Non-Cryst. Solids 137-138 (1991) 1027-1030: this document generally relates to, inter alia, doped and undoped glass layers as a p-n junction.

Korkinova and Andreichin, J. Non-Cryst. Solids 194 (1996) 256-259: this document generally relates to, inter alia, polarization of chalcogenide glass as depending on the materials used for electrode contacts.

**Kotkata, et al., Thin Solid Films 240 (1994) 143-146: this document generally relates to, inter alia, GeSe glass switching and film thickness, memory, current filament, chemical and mechanical switching properties, and discloses that heat treatment or aging improves switching.

**Kozicki et al., Superlattices and Microstructures, 27 (2000): this publication generally relates to, inter alia, solid solutions of metals (e.g., silver) in arsenic trisulfide and their physical and electrical characteristics.

**Kozicki et al., Microelectronic Engineering, vol. 63/1-3 (2002): this publication generally relates to, inter alia, the photodiffusion of Ag into germanium selenide glass films, the amount of Ag that can be incorporated in to such a film by photodiffusion, and the characteristics of the resulting doped films.

**Kozicki et al., Proceedings of the 1999 Symposium on Solid State Ionic Devices (1999): this publication generally relates to, inter alia, physical and electrical characteristics of metal doped chalcogenide films (photodoped $Ag_4As_2S_3$) between electrodes, useful in memories, configurable connections, and self-repairing interconnections.

**Kozicki and Mitkova, Proceedings of the XIX International Congress on Glass, Society for Glass Technology (2001): this publication generally relates to, inter alia, the physical effects of introduction of Ag into chalcogenide glasses, where introduction is by photodiffusion.

Lakshminarayan, et al., J. Instn. Electronics & Telecom. Engrs. 27 (1981) 16-19: this document generally relates to, inter alia, tellurium-containing chalcogenide glasses.

Lal and Goyal, Indian Journal of Pure & Appl. Phys. 29 (1991) 303-304: this document generally relates to, inter alia, theory on chalcogenide switching.

**Leimer et al., Phys. Stat. Sol. (a) 29 (1975) K129-K132: this document generally relates to, inter alia, germanium selenide glass polarization behavior, e.g., inductive and capacitive components.

**Leung, et al., Appl. Phys. Lett. 46 (1985) 543-545: this document generally relates to, inter alia, photoinduced diffusion of Ag into Ge_xSe_{1-x} and techniques for same.

Matsushita, et al., Jap. J. Appl. Phys. 11 (1972) 1657-1662: this document generally relates to, inter alia, Se-SnO_2 film switching and reversibility.

Matsushita, et al., Jpn. J. Appl. Phys. 11 (1972) 606: this document generally relates to, inter alia, polarized memory effect in Se films.

Mazurier, et al., Journal de Physique IV 2 (1992) C2-185 - C2-188: this document generally relates to, inter alia, Te-based glasses.

Messoussi, et al., Mat. Chem. And Phys. 28 (1991) 253-258: this document generally relates to, inter alia, selenium films and Bi electrodes.

**Mitkova and Boolchand, J. Non-Cryst. Solids 240 (1998) 1-21: this document generally relates to, inter alia, the analysis of Group IV and V chalcogenides.

**Mitkova and Kozicki, J. Non-Cryst. Solids 299-302 (May 14, 2002) 1023-1027: this document generally relates to, inter alia, photodissolution of Ag into Se-rich Ge-Se glasses for use in memory devices. The information disclosed in this reference was available to and known by the inventors prior to the filing of the application.

**Miyatani, J. Phys. Soc. Japan 34 (1973) 423-432: this document generally relates to, inter alia, electrical and ionic properties of solid solutions (e.g., doped glass), polarization, conductivity, Ag_2Se and Cu_2Se.

**Miyatani, J. Phys. Soc. Japan 14 (1959) 996-1002: this document generally relates to, inter alia, Ag_2Te and Ag_2Se ion conduction and the chemical potential of silver ions.

Mott, J. Non-Cryst. Sol. 1 (1968) 1-17: this document generally relates to, inter alia, glasses with vanadium or iron.

**Nakayama, et al., Jpn. J. Appl. Phys. 32 (1993) 564-569: this document generally relates to, inter alia, electrically erasable nonvolatile memories in chalcogenide

films of $As_xSb_yTe_z$, flash evaporative deposition techniques, a high set-voltage compared to read-voltage, V_t creates a "filament," and refresh-type pulse.

**Nakayama, et al., Jpn. J. Appl. Phys. 39 (November 15, 2000) 6157-6161: this document generally relates to, inter alia, phase transition random access memory (PRAM) made of chalcogenide glass.

**Nang et al., Jap. J. App. Phys. 15 (1976) 849-853: this document generally relates to, inter alia, Ge_xSe_{1-x} electrical and optical properties; it also discloses $Ge_{.80}Se_{.20}$, $Ge_{.60}Se_{.40}$, and $Ge_{.50}Se_{.50}$.

Narayanan, et al., Phys. Rev. B 54 (1996) 4413-4415: this document generally relates to, inter alia, chalcogenide glass switching as thermally originated.

**Neale and Aseltine, , IEEE Transactions On Electron Dev. Ed-20 (1973) 195-209: this document generally relates to, inter alia, read mostly memories with chalcogenides (e.g., Ge, Te), also discloses "floating gate," and material combinations including Ge and Se.

Ovshinsky and Fritzsche, Metallurgical Transactions 2 (1971) 641-645: this document generally relates to, inter alia, reversible changes in amorphous Si, Be, and B using a laser to write and erase.

Ovshinsky, Phys. Rev. Lett. 21 (1968) 1450-1453: this document generally relates to, inter alia, rapid and reversible resistive switching by electric field in amorphous semiconductors.

Owen, et al., IEE Proc. 129 (1982) 51-54: this document generally relates to, inter alia, a-Si:H, gold or aluminum dots and silver paste.

Owen, et al., Phil. Mag. B 52 (1985) 347-362: this document generally relates to, inter alia, photoinduced chalcogenide effects (As_2S_3) both reversible and irreversible.

**Owen, et al., Int. J. Electronics 73 (1992) 897-906: this document generally relates to, inter alia, threshold and memory switching a-Si:H ion conductor, polarity-dependant digital memory, analogue memory, and device operation dependency on metal contacts.

Pearson and Miller, App. Phys. Lett. 14 (1969) 280-282: this document generally relates to, inter alia, glass diodes.

**Pinto and Ramanathan, Appl. Phys. Lett. 19 (1971) 221-223: this document generally relates to, inter alia, electric field inducement of glass switching "filamentary" path.

Popescu, Solid-State Electronics 18 (1975) 671-681: this document generally relates to, inter alia, the physics of chalcogenide switching.

Popescu and Croitoru, J. Non-Cryst. Solids 8-10 (1972) 531-537: this document generally relates to, inter alia, switching behavior and thermal instability in chalcogenide glasses.

Popov, et al., Phys. Stat. Sol. (a) 44 (1977) K71-K73: this document generally relates to, inter alia, investigations into threshold and memory switching effects in amorphous selenium with electrodes of Ca, Ni, Ag, and Al.

**Prakash, et al., J. Phys. D: Appl. Phys. 29 (1996) 2004-2008: this document generally relates to, inter alia, switching of $Ge_{10}As_{45}Te_{45}$ glass, study of threshold voltage concept and switch back to off, suitability for read mostly memory.

Rahman and Sivarama, Mat. Sci. Eng. B12 (1992) 219-222: this document generally relates to, inter alia, chalcogenide glass with no exothermic crystallization reaction above T_g being of a threshold-switching type.

**Ramesh, et al., Appl. Phys. A 69 (1999) 421-425: this document generally relates to, inter alia, electrical switching in GeTe with Ag or Cu and thermal character investigations.

Rose, et al., J. Non-Cryst. Solids 115 (1989) 168-170: this document generally relates to, inter alia, a-Si with Cr or V contacts.

Rose et al., Mat. Res. Soc. Symp. Proc. V258 (1992) 1075-1080: this document generally relates to, inter alia, a-Si:H memory.

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Sheet 1 of 9

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First Named Inventor	Kristy A. Campbell, et al.
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Sheet 2 of 9

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				First Named Inventor	Kristy A. Campbell, et al.
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				Examiner Name	Not Yet Assigned
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